image at the certain time point and the extracted ultrasound frame image at the time point before the certain time point together.

APPENDIX 2

The present invention also provides the ultrasound image reconstruction method as written in the appendix 1, wherein the ultrasound frame image at the certain time point and the ultrasound frame image at the time point before the certain time point are ultrasound images acquired in states differing in the scan condition for the scanning of the sample with the ultrasound signal by use of the ultrasound probe.

APPENDIX 3

The present invention also provides the ultrasound image reconstruction method as written in the appendix 1, wherein the ultrasound frame image at the certain time point and the ultrasound frame image at the time point before the certain time point are ultrasound images acquired by performing the scan in states differing in at least one of the scan orientation and the scan focal length for the scanning of the sample with the ultrasound signal by use of the ultrasound probe.

APPENDIX 4

The present invention also provides the ultrasound image reconstruction method as written in the appendix 1, wherein the merging of the ultrasound frame image at the certain time point and the ultrasound frame image at the time point before the certain time point after undergoing the positional shift compensation is executed by splitting each of the ultrasound frame image at the certain time point and the ultrasound frame image at the time point before the certain time point into local regions, setting a weighting parameter varying from region to region for each of the locally split regions, and incorporating each region into the image reconstruction process so that a region having a greater weight is incorporated more into the result of the image reconstruction process.

APPENDIX 5

The present invention also provides the ultrasound image reconstruction method as written in the appendix 1, wherein a composite ultrasound image for one frame at a time point between the certain time point and the time point before the certain time point is estimated and generated by merging the extracted ultrasound frame image at the certain time point and the extracted ultrasound frame image at the time point before the certain time point after undergoing the positional shift compensation together.

APPENDIX 6

The present invention also provides the ultrasound image reconstruction method as written in the appendix 1, wherein: the sample is one that moves periodically, and the images acquired by the imaging are ultrasound images acquired by scanning the sample for a time longer than or equal to twice the cycle of the periodical movement of the sample under scan conditions varying cycle by cycle, and the extraction of the ultrasound frame image at the certain time point and the ultrasound frame image at the time point before the certain time point is extraction of the ultrasound frame image at the certain time point and an ultrasound frame image at a time point one cycle before the certain time point.

INDUSTRIAL APPLICABILITY

The present invention can be employed for ultrasound diagnostic devices which acquire images by transmitting and receiving an ultrasonic wave to/from a test object. In particular, the present invention can be employed for ultrasound diagnostic devices equipped with an ultrasound image reconstruction method for executing a process for enhancing the spatial resolution or the temporal resolution to acquired images by means of image processing.

DESCRIPTION OF REFERENCE CHARACTERS

100 test object
101 ultrasound diagnostic device
102 driving circuit unit
103 ultrasound probe
104 reception circuit unit
105 image generating unit
106 image processing unit
112 scan converter
113 display unit
120 control/storage/processing unit
121 input unit
122 control unit
123 storage unit
124 processing unit

What is claimed is:

1. An ultrasound diagnostic device comprising:
an image acquisition unit to acquire time-sequentially images in a predetermined interval from signals which receive a reflected wave from a sample scanned with an ultrasound signal by an ultrasound probe;
a displacement amount calculator to calculate a first displacement amount between neighboring time-sequentially images from a first image at a first time point and second image at a second time point which is before the first time point;
an intermediate image generator to generate an intermediate image at a certain time point between the second time point and the first time point, and the intermediate image is generated from the first image, the second image, and a second displacement amount at the certain time point calculated based on the first displacement; and
a display unit to subsequently display the second image, the intermediate image, and the first image, and
the first displacement amount and the second displacement amount are plural based on a difference of position, and are represented with a vector distribution.

2. The ultrasound diagnostic device according to claim **1**, wherein a frame rate of images displayed at the display unit is higher than images acquired at the image acquisition unit.

3. The ultrasound diagnostic device according to claim **2**, wherein the intermediate image is generated based of the first image entirely and the second image entirely,
and wherein the display unit subsequently displays the second image entirely, the intermediate image entirely, and the first image entirely.

4. The ultrasound diagnostic device according to claim **1**, wherein the second displacement amount is calculated by linear interpolation.

5. The ultrasound diagnostic device according to claim **1**, wherein the intermediate image generator generates the inter-